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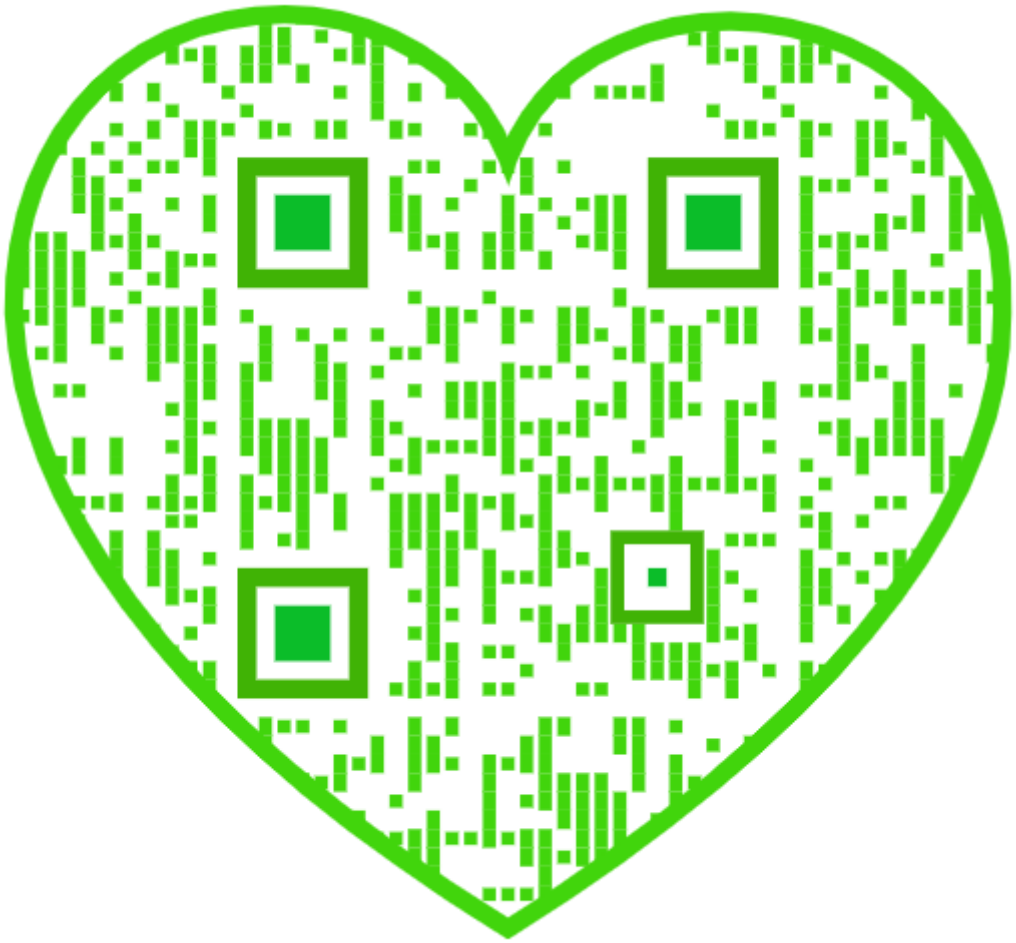

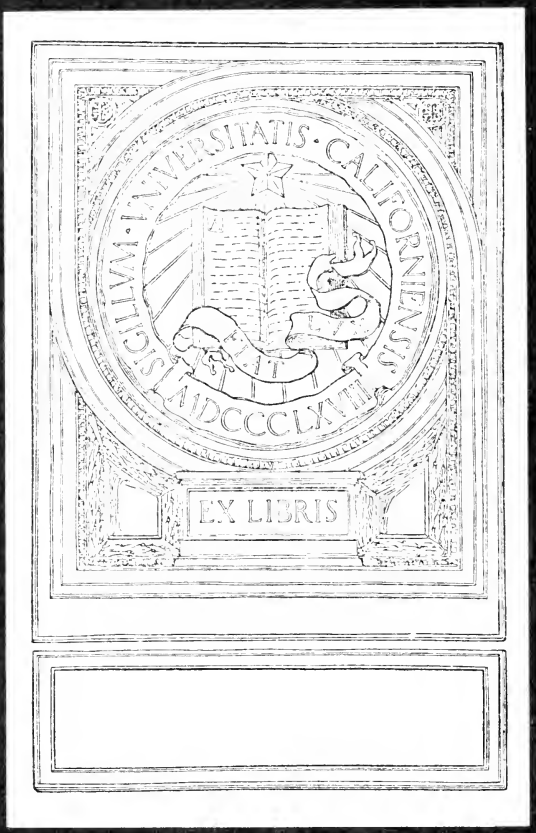
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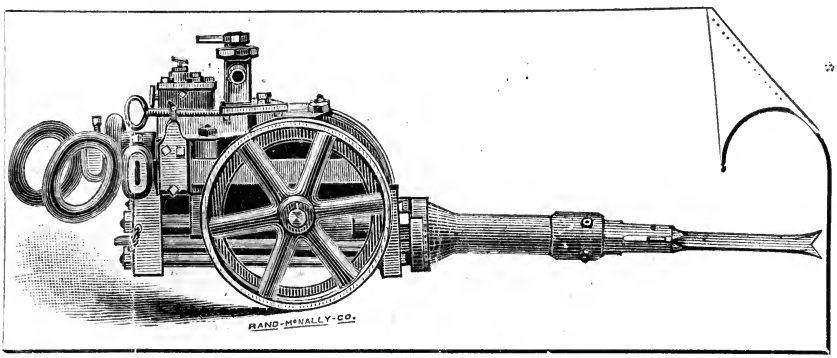
HARRISON

IMPROVED

MINING MACHINE



PATENTS

UNITED STATES.

DECEMBER 25, 1877.
SEPTEMBER 2, 1879.
SEPTEMBER 28, 1880.
JUNE 20, 1882.
JULY 25, 1882.
AUGUST 8, 1882.

REISSUED.

OCTOBER 12, 1880.
NOVEMBER 2, 1880.

GREAT BRITAIN.

FEBRUARY 6, 1879.
JUNE 21, 1880.

CANADA.

JUNE 30, 1880.

FRANCE.

SEPTEMBER 2, 1880.

BELGIUM.

JUNE 25, 1880.

GEO. D. WHITCOMB,
PROPRIETOR,
No. 206 LA SALLE STREET, CHICAGO.

1882

RAND, McNALLY & CO., PRINTERS, CHICAGO.

HARRISON

IMPROVED

MINING MACHINE

PATENTS.

UNITED STATES.

December 25, 1877.
September 2, 1879.
September 28, 1880.
June 20, 1882.
July 25, 1882.
August 8, 1882.

REISSUED.

October 12, 1880.
November 2, 1880.

GREAT BRITAIN.

February 6, 1879.
June 21, 1880.

CANADA.

June 30, 1880.

FRANCE.

September 2, 1880.

BELGIUM.

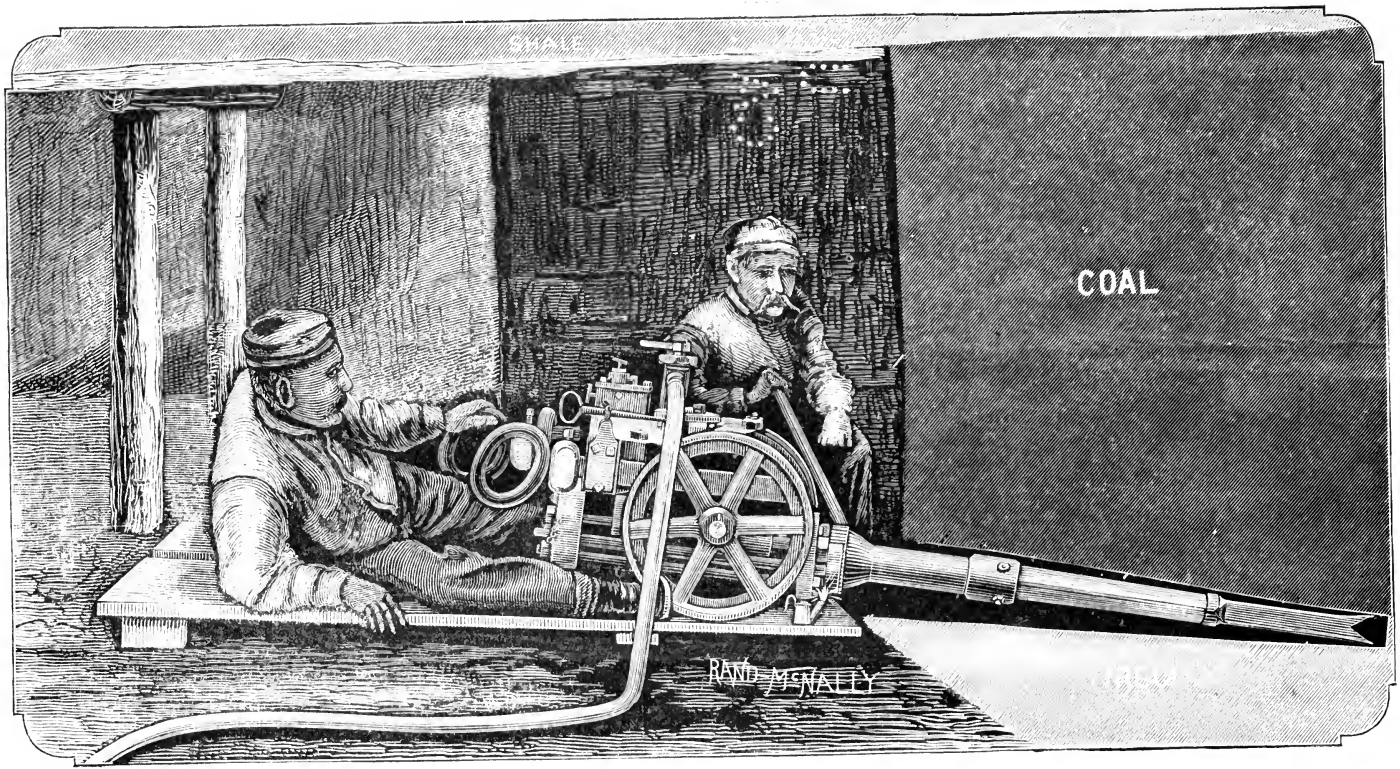
June 25, 1880.

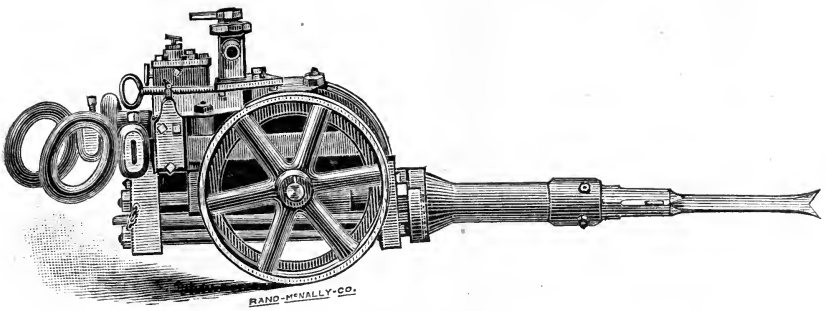
GEO. D. WHITCOMB,

Proprietor,

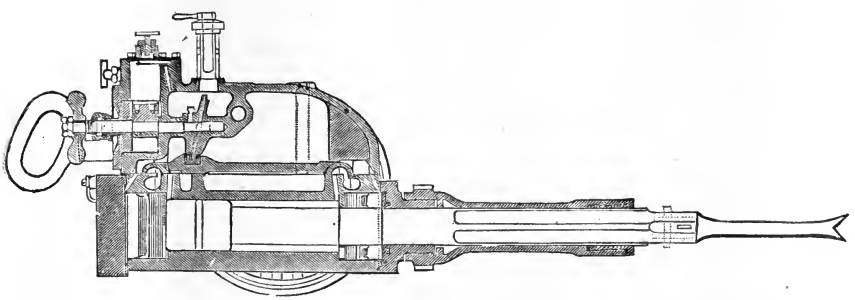
No. 206 La Salle Street, Chicago.

1882.


COAL
RAND McNALLY



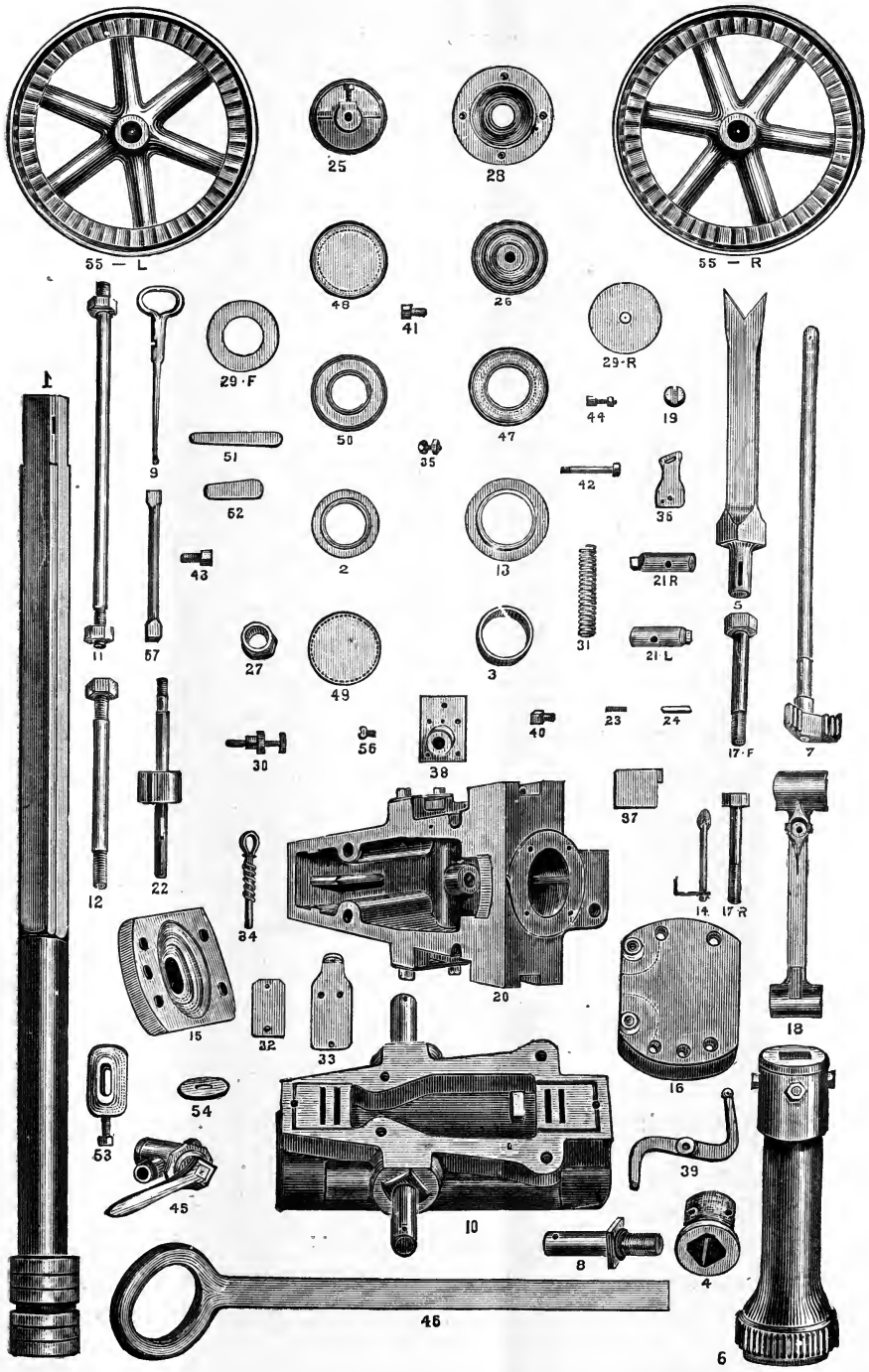
OUTSIDE VIEW.



LONGITUDINAL SECTIONAL VIEW, SHOWING SHORT HANDLES AND SHORT ROD.

EXPLANATION.

1. Piston Rods, Long, Short or Medium.
2. Piston Rod Crimp.
3. Piston Ring.
4. Bushing.
5. Pick.
6. Sleeve.
7. Lock for Sleeve.
8. Trunnion.
9. Pawl Pull.
10. Cylinder.
11. Long Cylinder Bolts (two of them).
12. Short Stud Cylinder Bolt (four of them).
13. Brass Ring for Crimp.
14. Exhaust Choker.
15. Forward Cylinder Head.
16. Rear Cylinder Head.
17. Air Chest Bolt, (Front and Rear).
18. Slide Valve.
19. Valve Cup.
20. Air Chest.
21. Pawls, (Right and Left).
22. Cam and Shaft.
23. Spring for Gib.
24. Gib.
25. Spiral Wheel for Running Slide Valve.
26. Fly Wheel.
27. Rotary Head Gland.
28. Rotary Head.
29. Buffer Plates, (Front and Rear).
30. Rotary Throttle.
31. Pawl Spring.
32. Foward Handle Guide.
33. Rear Handle Guide.
34. Handle Latch and Spring.
35. Bushing Bolts, (4 of them, countersunk heads.)
36. Pull Guide.
37. Rotary Gate.
38. Rotary Gate Cover.
39. "S" for Pawls.
40. Bolts for Gate Cover and Handle Guide, (15 of them, size, 1 in. by $\frac{1}{4}$ in.)
41. Bolts for Rotary Head, (sizes, three of them $1\frac{1}{2}$ in. by $\frac{1}{4}$ in., and one $1\frac{1}{4}$ in. by $\frac{1}{4}$ in.)
42. Pawl Bolts, (2 of them, size, $3\frac{5}{8}$ in. by $\frac{5}{8}$ in.)
43. "S" Bolt, (size, $1\frac{1}{4}$ in. by $\frac{5}{8}$ in.)
44. Pawl Pull Bolt and Nut, size, 1 in. by $\frac{5}{8}$ in.
45. Supply Cock.
46. Handles.
47. Front Leather Cushion.
48. Back Leather Cushion.
49. Back Leather Filling.
50. Front Leather Filling.
51. Drift.
52. Key.
53. Handle Weight.
54. Washer for Trunnion.
55. Wheels, (Right and Left.)
56. Oil Plug.
57. Socket Wrench.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CIRCULAR No. 4.

THE HARRISON

MINING MACHINE.

Since issuing Circular Number 3, the undersigned has made improvements of material value in the machine, which increases its capacity and enduring qualities, and reduces the cost of maintenance and amount of power required to run it. The reader is referred to late testimonials in the back of this circular regarding same.

The HARRISON MINING MACHINE has been in use for three years, and has become a favorite with those who have used it most.

Its small size, great strength and simplicity adapts it to nearly all kinds of Bituminous Coal Mining.

It has no gears, levers, chains, pulleys, cutter bars, or other complicated attachments revolving under the coal to produce friction and consume power; but it cuts an open channel, under the coal, of any desired vertical height, from eight to twelve inches in front, and tapering to two

inches in the rear, the same as if done by skilled manual labor, while the depth of the undercut can be made from three to five feet, as desired.

Another very important feature is the *line of the wear and concussion* on the tool is in the *exact line to give it the greatest possible endurance*, and admit of the point being supported by a *heavy heel.* Coal producers are requested to take special notice of this mechanical principle, the HARRISON MINING MACHINE being the only one now before the public having a motion that admits of a reasonable support or protection of the cutting points in this respect.

The HARRISON MINING MACHINE is from five feet six inches to seven feet in length, from the rear of the handles to the point of the tool. It is only twenty-four inches high to the top of the throttle, and nineteen inches wide over all, therefore requires but little room, and can be worked around and between props where a miner can swing a pick. It requires a maximum of only sixteen cubic feet of air per minute at forty-five pounds pressure to run it, and an average of only fifteen cubic feet each, per minute, when several machines are being run from one main pipe at the same time, which is fed to the machine through a one-inch four-ply hose. The projectile weighs from sixty to ninety pounds—according to the length of the rod—and strikes from one hundred and ninety to two hundred and ten blows per minute. The total weight of the machine is from five hundred and seventy to six hundred and twenty pounds. One skilled man can operate it, and one ordinary laborer is required to shovel away the cuttings. For ease in running it, the operator uses two boards of convenient size for a floor, which the laborer places in the required position as the work progresses. From twenty-five to fifty square yards

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of floor is the ordinary amount undercut by one machine each day. It has often undercut from six to eight square yards of floor per hour, cutting time, but all lost time for moving and other contingencies are included in this statement of a day's work. The tools can be sharpened by a blacksmith, the same as with an ordinary drill or cold chisel.

Only the best of materials are used in constructing the machine; the piston head and rod are made solid in one piece and of special homogenious steel, and the picks of the best tool steel. All the parts are shown on the fifth page of this circular, and are made interchangeable, and will be furnished separately to customers for repairs when desired. When ordering parts please use the numbers, letters and names shown in this circular.

Several sizes of wheels are made for adapting the machine for entry driving and shearing.

When it is desired for use in very thin coal veins, the throttle and hose connection is attached to its side instead of the top as herein shown. This change reduces its height over all to less than twenty inches.

When putting in pipes for conveying air to the machines the diameter for use in the main and cross entries should be sufficient to keep the velocity of the air below twenty feet per second. A one and one-quarter inch pipe is large enough for use in the rooms.

If parties desiring information regarding the adaptability of the machine for use in their coal will please write and answer the following questions, an approximate estimate of cost of plant and saving by the use of the machine over hand labor will be returned in reply:

What is the thickness and character of your coal vein?

Are there any pyrites, sulphur, or any other hard substances in it that will injure a heavy pick?

What is the character of your roof, and distance you can safely keep the props from the working face of the coal?

Of what is the underlying strata composed, and its character—whether hard or soft?

Do your miners mine in it or the coal?

Is your coal vein horizontal? If not, please state its average dip or angle.

What is the width of your rooms?

What is your present mining rate? Is it for mine run or for screened coal delivered on pit cars, or wagons at the working face, or at the switches at the main road?

What is the average daily product required from your mine?

RECAPITULATION OF CLAIMS.

First—The machine is small, simple, and durable.

Second—It can be worked in a very small space, and requires only one skilled operator and one laborer to run it.

Third—It does not require jacks, tracks, or other mechanical appliances to hold it to its work.

Fourth—It is not necessary to trim the floor, face or sides of the rooms where it is to be worked.

Fifth—It will do more work for each cubic foot of air consumed, than any machine in use.

The correspondence of coal producers who desire to investigate mining machinery with a view of using the same for their work, is solicited, and will be given careful attention.

Respectfully,

GEO. D. WHITCOMB,

PROPRIETOR,

206 La Salle Street, Chicago.

REFERENCES.

We refer to the following named parties who are using the HARRISON MINING MACHINE:

W. S. NEARING, Supt. Morris Run Coal Mining Co.,
Morris Run, Penn.

J. B. ATKINSON, Sec'y and Treas. St. Bernard Coal Co.,
Earlington, Ky.

E. J. CRANDALL, Manager Abbey Coal & Mining Company,
100 North Fourth Street, St. Louis, Mo.

A. L. SWEET, Gen. Mg'r. Chicago, Wilmington & Vermillion Coal Co.,
Chicago, Ill.

J. L. PLATT, President Fort Dodge Coal Company,
Fort Dodge, Iowa.

W. B. BROOKS & SON, Miners and Shippers of Hocking Coal,
Columbus, Ohio.

STOUT, VAN WICKLE & Co., 170 Superior Street, Cleveland, Ohio.

C. REINECKE, 1700 Clark Avenue, St. Louis, Mo.

GARTSIDE COAL Co., 516 Olive Street, St. Louis, Mo.

D. KNECHT & SON, 522 Pine Street, St. Louis, Mo.

CONFIDENCE COAL & MINING Co., 12 S. Commercial St., St. Louis, Mo.

WESTMORELAND COAL Co., { 230 So. Third St., Philadelphia, Pa.
Irwins Station, Pa.

CONSOLIDATED COAL & MINING Co., Cincinnati, O.

DONK BROS. & Co., 522 Olive Street, St. Louis, Mo.

NORTH WESTERN MINING & EXCHANGE Co., Dagus Mines, Pa.

COAL VALLEY MINING Co., Rock Island, Ill.

LATHROP COAL & MINING Co., Kewanee, Ill.

CHICAGO & VAN METER COAL Co., Van Meter, Iowa.

NEW YORK & OHIO COAL Co., Sherodsville, Ohio.

LEAVENWORTH COAL Co., Leavenworth, Kansas.

E. G. SAVAGE, Manager TRINIDAD COAL & COKING Co., Starkville, Col.

MENDOTA COAL & MINING Co., { Mount Pleasant, Iowa,
Mendota, Mo.

W. P. REND & Co., Chicago, Ill., and McDonald, Pa.

TESTIMONIALS.

E. G. SEBREE, Pres't. J. B. ATKINSON, Sec'y and Treas.

ST. BERNARD COAL COMPANY,

EARLINGTON, KY., November 22d, 1881.

GEORGE D. WHITCOMB, ESQ.

Dear Sir: Our eighteen months' experience with the "Harrison" has been very interesting and profitable. The machine is a success, and we would not be without it. It reduces the cost of getting coal 25 to 33 per cent. and we expect to make a still greater margin.

It takes time to systematize the new way in old workings, but we can show the above result. Our miners, who have been fortunate enough to get a machine, like it so well that they can not be induced to go back to the old method, but any one can readily operate the machine—requires practice, of course, to become proficient. Your machine does all you claim for it.

Yours truly,

JNO. B. ATKINSON, SEC'Y.

E. G. SEBREE, Pres't. J. B. ATKINSON, Sec'y and Treas.

ST. BERNARD COAL COMPANY,

EARLINGTON, KY., October 5th, 1882.

GEORGE D. WHITCOMB, ESQ.,

Dear Sir: We have given your new improved machine a good trial, and find several improvements over the old one. The packing crimp is far superior to the old system of packing.

We hope to want more machines shortly.

JNO. B. ATKINSON, SEC'Y.

OFFICE OF

THE MORRIS RUN COAL MINING CO.,

W. S. NEARING, Sup't.

MORRIS RUN, PA., November 23d, 1881.

GEORGE D. WHITCOMB, Proprietor

Harrison Mining Machine, 206 LaSalle St., Chicago, Ill.

Dear Sir: We continue to use the Harrison Coal Cutters, and with the greatest satisfaction. The machine is of great value in headings which are to be driven into new territory, as well as in chambers.

After using these machines during several years, it is a pleasure to say, they are very desirable, useful and economical; in fact, we regard them as indispensable. Yours, very truly,

W. S. NEARING, SUP'T.

OFFICE OF THE

ABBEY COAL AND MINING COMPANY.

GENERAL OFFICE, 100 N. FOURTH ST.,

ST. LOUIS, MO., August 21st, 1882.

GEORGE D. WHITCOMB, ESQ.,

Dear Sir: The new machine which you sent us the latter part of July has been at work steadily since July 31st. Being new and somewhat different in its requirements from the older machines, Kneedler (who is running it), has been about a week getting used to its peculiarities; but has now begun to show very good work, and I send you herewith his work for the past week. On Monday, August 7th, the mine did not work, owing to repairs being made on the boilers.

Tuesday, August	8th,	he cut	135	lineal	feet.
Wednesday, "	9th,	"	80	"	"
Thursday, "	10th,	"	130	"	"
Friday, "	11th,	"	130	"	"
Saturday, "	12th,	"	125	"	"
Monday, "	14th,	"	125	"	"
Or			725	lineal	feet.

For his week's work. I include the Monday's work to offset the idleness of the Monday previous.

We are very much pleased with the working of this machine, and I would like two more of this pattern as soon as you can spare them. The undercutting was done to a depth of four and a half feet.

Yours truly,

W. R. CRANDALL, SEC'Y.

CHICAGO, WILMINGTON & VERMILLION COAL CO.

CHICAGO, December 23d, 1881.

Mines at Braidwood and Streator, Ill.

GEO. D. WHITCOMB, ESQ.,

Chicago, Ill.

Dear Sir: We have ten of your Harrison Coal Cutters at work in our mines at Braidwood, and thirteen at Streator. We have cut as high as 26 feet of entry per day of ten hours, with one machine.

We are undercutting from three to four rooms, 21 feet wide, 4½ feet under per day, with each machine, which is an average of 30 tons to each machine, besides doing considerable entry drivin

The coal mined by these machines costs us 20 cents per ton less than by the regular miner. We expect to equip our Streator mines next summer entirely with these machines,

Yours truly,

A. L. SWEET, GEN'L MANAGER.

PURCHASING AGENT'S OFFICE

MORRIS RUN COAL MINING CO.,

(ORDER 133.)

CORNING, N. Y., October 3d, 1882.

GEORGE D. WHITCOMB:

Please furnish on account of this company, the following materials: three Harrison Mining Machines.

A. BEERS, PURCHASING AGENT.

OFFICE OF

C. REINECKE, OPERATOR AND DEALER IN COAL,

1700 Clark Avenue,

ST. LOUIS, MO., November 17th, 1881.

Mines on Louisville & Nashville R. R.

GEORGE D. WHITCOMB, ESQ.,

Chicago, Ill.

Dear Sir: I have been using your Harrison Mining Machine in my mines for the past fifteen months, and I can cheerfully say that they have given entire satisfaction in every respect, and I am sure they far excel any mining machine in the market. They are light and portable, easy to move about, no chains breaking, thereby causing expense and delay, and do not require near as much power as other machines to run them; and, furthermore, they are simple and men can be easily taught to run them. I have been mining on an average of 1,200 bushels of coal per day with each machine, in a six (6) feet vein, and I can cheerfully recommend your machine to any one. Hoping you much success, I remain

Very truly yours,

Mines at Birkner's Station and Belleville, Ill. C. REINECKE.

OFFICE OF

C. REINECKE, 1700 CLARK AVENUE.

(MINES AT BELLEVILLE, ILL.)

ST. LOUIS, MO., October 3d, 1882.

GEO. D. WHITCOMB:

Dear Sir: Victor Gardner cut with one of your new machines in my mine 605 lineal feet face, to a depth of four feet in six days of ten hours each.

I believe the new machines an improvement upon the old in regard to capacity, strength and endurance.

Yours truly, C. REINECKE.

ST. LOUIS, September 25th, 1882.

GEO. D. WHITCOMB:

You will please send me, just as soon as you possibly can, two more machines, the same pattern as the last two new ones you sent. You will please let me know how soon you can send them.

Yours, C. REINECKE.

KEWANEE, ILL., December 6th, 1881.

GEO. D. WHITCOMB, ESQ.,
Chicago.

Dear Sir: I am in receipt of yours of the 30th ult. In response to your request for information touching my experience in the use of the Harrison Mining Machine, I submit the following: I have them in use for the Fort Dodge Coal Co., near Fort Dodge, Iowa, and for the Chicago and Van Meter Coal Co., at Van Meter, Iowa, in one mine only at each place. At the former place we run two during the day shift and only one at night. Product, from 100 to 125 tons per day. The undercutting costs us about an average of 18 cents per ton, and the balance of the work, including the delivery of coal to the mule track, we have contracted at a saving of 60 cents per ton under the regular price paid where mining is included, working a saving over all of 42 cents per ton, as compared with same work when machines are not used. At the Van Meter Mine we are not yet fully organized for the use of the machines systematically, but have the air power set, and intend to run four to six machines there soon. It is my intention to introduce them into all new openings hereafter.

Respectfully, J. L. PLATT, PRES'T,
Fort Dodge Coal Co., and
Chicago and Van Meter Coal Co.

Raton Coal and Coking Co., Raton, N. M.
Canon City Coal Co., Rockvale, Col.

OFFICE OF
E. G. SAVAGE,

Trinidad Coal and Coking Co. Starkville, Col.
E. Wilder, Treas. Coal Cos., Topeka, Kan.

Manager Coal Companies in Colorado and New Mexico.

RATON, N. M., February 25th, 1882.

GEO. D. WHITCOMB, ESQ.,
Chicago, Ill.

Dear Sir: * * * * The machines work splendid and do all you claim. * * * * I will have no hesitancy in recommending your machines.

Yours truly,
E. G. SAVAGE, MANAGER.

RATON, N. M., July 31st, 1882.

GEO. D. WHITCOMB.

Dear Sir: Yours of the 25th received and contents noted. * * * * We work the machines in the new mine. I am much pleased with them, and as soon as we get in full blast, will need more machines.

Yours truly,
E. G. SAVAGE, MANAGER.

THE COLORADO COAL AND IRON COMPANY,

GEORGE U. ENGLE, Sup't.

EL MORO, COL., December 15th, 1881.

GEO. D. WHITCOMB, ESQ.

Dear Sir: The following is the result of a trial of two Harrison Coal Mining Machines, made this day at El Moro Mine:

No. 1.	30	lineal feet,	4	feet	4	inches	under—	Room on face.
	8	"	"	4	"	4	"	" —Break through on Butt.
	21	"	"	4	"	8	"	" —Room on face.
	9	"	"	4	"	0	"	" —Break through on Butt.
	12	"	"	4	"	4	"	" —Room on face.
	9	"	"	4	"	4	"	" —Break through on Butt.
	30	"	"	4	"	4	"	" —Room on face.

119 lineal feet. Time—Nine hours, fifteen minutes.

No. 2.	21	lineal feet,	4	feet	6	inches	under—	Room on face.
	7	"	"	4	"	4	"	" —Break through on Butt.
	31	"	"	4	"	4	"	" —Room on face.

59 lineal feet. Time—Four hours, fifty minutes.

Owing to want of time to make preparations for this trial, we could not give the machines sufficient face for their full capacity.

Yours truly,

GEO. U. ENGLE, SUP'T.

OFFICE OF SUPERINTENDENT OF

WESTMORELAND COAL COMPANY.

IRWINS STATION, PA., October 14th, 1882.

GEO. D. WHITCOMB, Proprietor Harrison Mining Machine.

Dear Sir: The following is the result of a week's run with one of your Harrison Mining Machines in rooms 60 feet wide at our Westmoreland Shaft :—

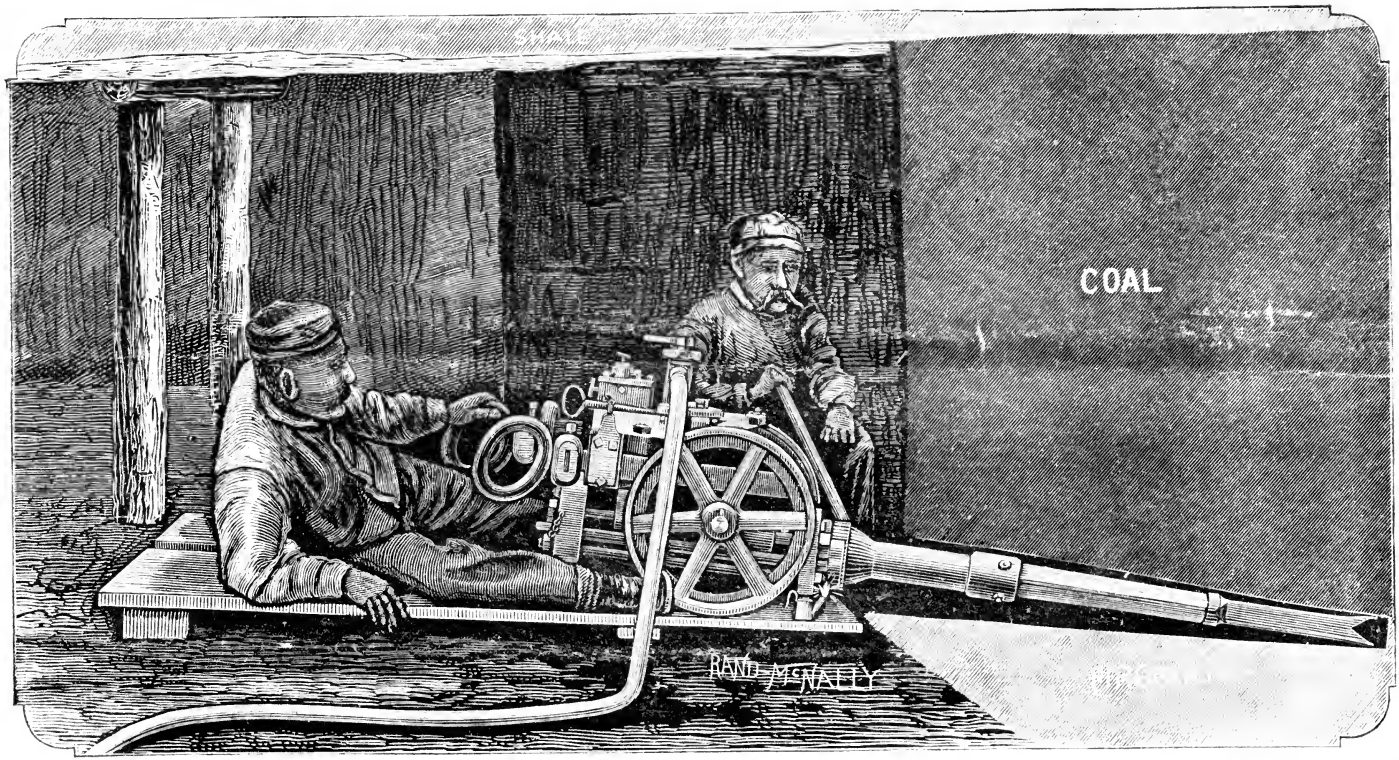
	Running Time.	Lineal Feet.	Depth.	Square Feet.
October 2.	7.30	78.0	4 ft. 6 in.	351
" 3.	8.15	83.0	4 " 6 "	374
" 4.	9.00	89.0	4 " 6 "	400
" 5.	9.30	93.0	4 " 6 "	418
" 6.	9.30	91.0	4 " 6 "	409
" 7.	8.00	81.0	4 " 6 "	365
Total.....	51.45	515.0	4 ft. 6 in.	2,317
Per day.....	8.37	85.10		386
Per hour.....		10.0		45

Total working time, 60 hours; running time, 51 hours 45 minutes; loss, 8 hours 15 minutes. This includes eight changes from one room to another, and some delays in getting away the coal. The product for the week was 299 tons, or 50 tons per day. Yours very truly,

LEWIS STOCKELL, ENGINEER.

DISCARDED

THE HARRISON MINING MACHINE, (Working Views)



GEO. D. WHITCOMB, Proprietor, 206 La Salle Street, corner Adams, Chicago, Ill.

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